

2/2 029

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0131431

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MOLD LINING COMPNS. USED IN PRESSURE MOLDING OF METALS WERE PREPD. FROM MOS SUB2, EPOXY RESINS, DI-BU PHTHALATE, AND POLYETHYLENE POLYAMINE DILD. WITH NITRO CONTG. SOLVENTS. A COMPN. OF THIS TYPE WAS DILD. WITH A MIXT. OF PHME, BUOH, ETOH, ME SUB2 CO, ETHYLENE GLYCOL, AND BU OR AMYL ACETATE, COATED ONTO THE WALL OF A MOLD, AND DEGREASED WITH ME SUB2 CO OR ETOH. THE COATING HARDENED MORE QUICKLY THAN PREVIOUS COATING COMPNS. TO GIVE A SMOOTH THIN LINING WHICH INCREASED THE EASE OF REMOVAL OF THE CASTING. AFTER 2-3 CASTINGS, THE SURFACE WAS WASHED WITH PETROLEUM AND RECOATED. FACILITY: ORDZHONIKIDZE, URAL PLANT OF HEAVY MACHINE BUILDING.

UNCLASSIFIED

GEH'FER, A.P.

Science
USSR

SYNTHESIS AND INVESTIGATION OF PHOSPHORIC ACID
ESTERS CONTAINING A TRICHLOROETHYL GROUP.
THE PREPARATION CHLOROPHOSF.

UDC 647.26.118

JPRS 56168

5 June 1972

[Article by Ye. S. Shepelova, M. S. Borodach, P. I. Sutin, A. P. Geh'fer, Yu. S. Yagan, O. Ya. Kuznetsov, L. I. Izhakova, V. G. Timoshenko, I. L. Fefil'ayn, Institute of Petrochemical Synthesis Acad. A. V. Topol'yev, USSR Academy of Sciences, Moscow, Izvestiya AN SSSR, Khimicheskii, Vol 203, No 4, 1972, aligned to press 9 July 1971, pp 856-857]

It is known that the physiologically active phospho-organic compounds — cholinesterase inhibitors are pentavalent phosphorus compounds generally represented by the formula:



Here A and B are the (freeing alkoxy), alkyl, aryl and other groups; X is the weak acid residue. Subsequently, the X bond with phosphorus has an anhydride character and the substance itself has the properties of a phosphorylating agent. Utilized in the capacity of group X were precipitates of hydrofluoric acid and cytosynic acid, phenols and mercaptans of variable structure and others.

Trichloroalkoxy groups were used in the present work for X since it is known that the corresponding alcohols containing a trichloromethyl group are markedly acidic. A number of trichloroalkylphosphoric acid esters was synthesized and investigated. Their characteristics are cited in Table 1. The synthesized esters are colorless, slightly mobile liquids with a weak aromatic scent, easily soluble in organic solvents, mineral and vegetable oils, and poorly soluble in water. The synthesis scheme includes the following reactions:

- 1 -

[1 - USSR - D]

USSR

UDC 621.373.826:550.3

GEL'FER, E. I., KIYAZEVA, M. N., POSTNIKOVA, T. A., and
~~CHEREMUKHIN, A. K.~~

"Correlation of Laser Beam Focusing Intensity"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl.
(Tenth All-Union Conference on the Propagation of Radio Waves;
Report Theses--collection of works) "Nauka," 1972, pp 250-253 (from
RZh--Radiotekhnika, No 10, 1972, Abstract No 10D379)

Translation: The spatial structure of the intensity in the focal plane of a focused laser beam passing through a layer of turbulent atmosphere is investigated. Two identical positive images of the beam cross section are put in a two-dimensional optical correlometer to permit obtaining the correlation function of the intensity by using information regarding the intensity value over the whole beam cross section. The correlation function was measured for five different distances. The obtained radii of the correlation of intensity in the focal plane are found, in their order of magnitude, to be closer to the intensity correlation radius for an infinite plane wave (about $\sqrt{\lambda h}$) than to the diffraction dimension (λ/d)L.
A. K.

1/1

- 76 -

USSR

UDC: 535.3:551.51

GEL'FER, E. I., GURVICH, A. S., and CHIBREMUKHIN, A. A.

"Intensity Distribution in the Focal Plane of a Light Beam Passing Through a Layer of Turbulent Atmosphere"

Gor'kiy, Izvestiya VUZ--Radiofizika, vol. 14, No. 8, 1971, pp 1203-1211

Abstract: This paper is the continuation of an earlier work (E. I. Gel'fer, et al, Izvestiya VUZ--Radiofizika, 13, No. 2, 27, 1970) which described a method for measuring the area of intensity overshoots in the focal plane of a convergent wave passing through a layer of turbulent atmosphere. The present paper gives the results of further study of the intensity distribution in the focal plane. The intensity measurements were conducted for a wave propagated in an atmospheric layer close to the earth's surface over horizontal distances of 180 and 650 meters. The path selected for the light beam was 1.5-2 meters above a uniformly smooth surface in the steppes. Apparatus for making the measurements was, except for slight modifications, the same as that used in the earlier work.

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USSR

GEL'FER, E. I., et al., Izvestiya VUZ--Radiofizika, Vol 14, No 8, 1971, pp 1208-1211

Formulas are developed for the logarithmic-normal intensity probability distribution for the effective radius of the beam cross section, and a curve comparing the experimental results with the formulas shows agreement between the two to be good. The authors are connected with the Gorkiy State University.

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- 69 -

1/2 036 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--INVESTIGATION OF INTENSITY OF A FOCUSED LASER BEAM PASSED THROUGH A
TURBULENT ATMOSPHERE -U-
AUTHOR-(03)-GELFER, E.I., FILATOVA, E.I., CHEREMUKHIN, A.M.
COUNTRY OF INFO--USSR
SOURCE--RADIOFIZIKA, IZV. VUZ. VOL. 13, NO. 2, 1970, P. 271-274
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--LASER BEAM, LASER THEORY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1979/1698 STEP NO--UR/0141/70/013/002/0217/0274
CIRC ACCESSION NO--AP0048016
UNCLASSIFIED

2/2 036

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0048016

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INTENSITY IN A FOCAL PLANE OF THE FOCUSED LASER BEAM PASSED THROUGH A TURBULENT ATMOSPHERIC LAYER WAS INVESTIGATED. THE AREAS OF INTENSITY OVERSHOTS HAVE BEEN MEASURED AT DIFFERENT LEVELS OF ITS RELATIVELY PERFECT DIFFRACTION MAXIMUM AND AT DIFFERENT VALUES OF FLUCTUATIONS OF THE REFRACTIVE INDEX OF THE AIR.

1/3 011 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--PERRHENATES (F ANTIPYRINE AND ITS DERIVATIVES. GRAVIMETRIC AND
TITRIMETRIC DETERMINATION OF RHENIUM BY MEANS OF
AUTHOR--(05)-AKIMOV, V.K., BUSEV, A.I., ZAYTSEV, B.YE., YEMELYANOVA, I.A.,
GELFER, S.M.
COUNTRY OF INFO--USSR
SOURCE--ZH. ANAL. KHIM. 1970, 25(3), 518-25
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--RHENIUM, MINERAL, METAL CHEMICAL ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3005/0161

STEP NO--UR/0075/70/025/003/0518/0525

CIRC ACCESSION NO--AT0132442

UNCLASSIFIED

2/3 011

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132442

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PERRHENATES OF ANTIPYRINE (I), DIANTIPYRYLMETHANE (II), DIANTIPYRYLMETHYLMETHANE (III), DIANTIPYRYLPROPYLMETHANE (IV), AND DIANTIPYRYLPHENYLMETHANE (V) WERE OBTAINED BY ADDN. OF 2PERCENT 1:1 PYRYLMETHANES, ACOH TO AN ACID (0.1-0.5N H SUB2 SO SUB4) SOLN. OF KREO SUB4. ALL THE PERRHENATES ARE DIFFICULTLY SOL. IN H SUB2 O WITH THE EXCEPTION OF THAT WITH I. THEIR COMPN. AND STRUCTURE WERE STUDIED. THE PERRHENATE OF I IS A WHITE POWDER SOL. IN H SUB2 O AND IN MOST OF THE ORG. SOLVENTS AND DECOMPS. ON MELTING. THE PERRHENATE OF II DISSOLVES IN MINERAL ACIDS AND ORG. SOLVENTS, DECOMPS. ON MELTING AT 190DEGREES; THE PERRHENATE OF III BEHAVES ANALOGOUSLY TO THAT OF II, M. 116DEGREES; THE PERRHENATE OF IV MELTS AT 198DEGREES AND THAT OF V AT 202DEGREES. PERRHENATES BEHAVE IN NONAQ. MEDIA AS MONOBASIC ACIDS AND CAN BE TITRATED BY ALKALIS. THE TITRN. CURVE HAS 1 JUMP, REPRESENTING THE NEUTRALIZATION OF THE CATION. THE PERRHENATE OF I IS THE MOST ACID, THOSE OF IV AND V THE WEAKEST ACIDS. THE SOLY. OF THE PERRHENATES DECREASES IN THE ORDER I GREATER THAN II GREATER THAN III GREATER THAN IV GREATER THAN V. THE BEST PRECIPITANT HOWEVER IS IV. THE SOLY. OF THE PERRHENATE OF IV INCREASES SOMEWHAT AFTER INCREASING THE ACIDITY OF SOLNS. A GRAVIMETRIC AND A TITRIMETRIC METHOD WAS DEVELOPED FOR RE DETN. BY USING IV AS PRECIPITANT. ALKALI AND ALK. EARTH METALS, ZN(II), AL(III), CD(II), FE(II), CU(II), CL PRIME NEGATIVE AND SO SUB4 PRIME NEGATIVE NEGATIVE DO NOT INTERFERE; MO(VI), W(VI), NO SUB3 PRIME NEGATIVE DO.

UNCLASSIFIED

3/3 011

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132442

ABSTRACT/EXTRACT--THE GRAVIMETRIC METHOD PERMITS THE DETN. OF 15-60 MG RE
AS (C SUB26 H SUB30 N SUB4 O SUB2 .H)REO SUB4 WITH A MAX. ERROR OF
0.52PERCENT RELATIVE. IN THE TITRN. METHOD, THE PPT. OF THE PERRHENATE
OF IV FROM THE GRAVIMETRIC METHOD IS DISSOLVED IN 50-60 ML ME SUB2 CO
AND TITRATED POTENTIOMETRICALLY WITH 0.1N NAOH OR ET SUB4 NOH IN A 3:1 C
SUB6 H SUB6 DOUBLE BOND MEOH MIXT. BY USING A GLASS AND A CALOMEL
ELECTRODE. THE METHOD ALLOWS THE DETN. OF 24-25 MG RE WITH A PLUS OR
MINUS 3.1PERCENT ERROR. FACILITY: SCI.-RES. INST. ORG.
INTERMED. DYES, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 534.222.1

GEL'FGAT, V. I., Acoustic Institute of the USSR Academy of Sciences, Moscow

"Point Source Field in a Randomly Inhomogeneous Medium. One-Dimensional Problem"

Moscow, Akusticheskiy Zhurnal, Vol XVIII, No 1, 1972, pp 31-41

Abstract: An exact solution was obtained for the one-dimensional problem of multiple scattering of the field of a point monochromatic source in a medium containing a segment with random discrete diffusers. It was assumed that the phases of the reflection coefficients of each diffuser are independent of the remaining characteristics of the diffuser and they are uniformly distributed in the interval $(0, 2\pi)$. The closed expressions were obtained for the mean field and mean energy density of the field (the latter, in the case of absence of losses). Oscillations of the mean energy density damping on going away from the source were detected. Beyond the limits of applicability of the method of small disturbances, the transfer equation usually used to obtain the mean energy density gives results differing sharply from the exact solution. The transfer equation (and together with it, the approximate methods of solving the exact Bethe-Salpeter equation leading to the transfer equation) incorrectly considers the contribution of the multiply scattered waves to the mean energy density. The indicated divergence is caused not by incorrectness of the calculation method but by lack of correspondence of the method to the initial assumptions regarding the nature of the successive scattering acts.

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USSR

UDC 534.833.522.4;534.213.4

GEL'EGAT, V. I., GUZHAS, D. R., MIKHAYLOV, R. N., and
TARTAKOVSKIY, B. D., Acoustic Institute of the Academy of Sciences USSR, Moscow

"Sound Insulation of a Closed Cylindrical Shell by Inside Excitation"

Moscow, Akusticheskiy Zhurnal, Vol 17, No 4, 1971, pp 545-549

Abstract : The sound insulation of a cylindrical shell on low frequencies by axisymmetric inside excitation and propagation of normal waves excited within the shell is investigated. Formulas are derived characterizing the sound insulation of the cylindrical shell for diffusion sound and normal waves. The calculated dependence of the diffusion sound insulation on the frequency, for $h/R=0.03$ and $h/R=0.003$ (where: R = radius of the cylinder and h =wall thickness of the cylinder), is shown. An experimental proof of the formulas conducted on tubes, 6 m long and 219 mm in diam., wall thickness 2mm and 8 mm, revealed a good agreement with the calculation. It was found that the sound insulation of the shell on low frequencies exceeds considerably the sound insulation of a plate of the same thickness. With increasing frequency the sound insulation decreases and coincides with the sound insulation of a plate on high frequencies. Four illustr., 14 formulas, six biblio. refs.

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Foundry

USSR

UDC: 669.71.042.62.

GEL'FGAT, Yu. M.

"MHD Chokes for Regulation of the Flow Rate of Liquid Metals"

MGD v Metallurgii i Liteyn. Proiz-ve [MHD in Metallurgy and Foundry Production -- Collection of Works], Kiev, 1972, pp 131-132 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G156, by G. Svodtseva).

Translation: MHD chokes were tested with Hg at the Institute of Physics, Academy of Sciences LatvSSR and with Al at the All-Union Scientific Research Institute for Metallurgical Machine Building. The Al tests (type ADO, temperature 730°) were performed on an experimental continuous casting and rolling installation for nonferrous metals, type ANLP-AK-1.5. The initial metal flow rate with the MHD choke turned off was 1800 cm³/sec. When the magnetic field was switched on with an induction of 0.4-0.5 tl, the liquid metal flow rate dropped by a factor of 4. MHD chokes are simple in design and can be used wherever the technical conditions require that the quantity of metal passed be matched to the operating mode of individual units of an installation.

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USSR

UDC 538.4

GEL'PGAT, Yu. M., OL'SHANSKIY, S. V., SHTERN, A. G.

"Experimental Study of the Interaction of a Flow with a Heterogeneous Magnetic Field"

7-ye Soveshch. po Magnit. Gidrodinamike. T. 1 [Seventh Conference on Magnetic Hydrodynamics, Vol 1], Riga, Zinatnye Press, 1972, pp 187-189, (Translated from Referativnyy Zhurnal, Mekhanika, No 11, 1972, Abstract No 11 B34 by A. L. Genkin).

Translation: Results are presented from experiments on determination of the hydraulic resistance of the flow of mercury in a circular tube in a heterogeneous magnetic field. The Reynolds number and magnetic interaction parameter change within limits $64,600 \leq R \leq 182,000$, $0 \leq N^* \leq 1.2$. It is demonstrated that the effectiveness of deceleration depends significantly on the magnetic field spacing T and is maximal with a T/S ratio of about 3.2, where S is the gap between projections in the poles of the magnet. The results of experiments agree qualitatively with calculations performed by a method described earlier by the authors (see abstract 11 B33).

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USSR

UDC 538.4

GEL'FGAT, Yu. M., KIT, L. G.

"Investigation of Conditions for the Rise of M-Shaped Velocity Profiles Under the Sudden Expansion or Narrowing of MHD Flows"

Riga, Magnitnaya Gidrodinamika, No. 1, Jan/Mar 71, pp 25-30

Abstract: Conditions for the rise of M-shaped velocity structures in a constant magnetic field are analyzed on the basis of a qualitative study of magnetohydrodynamic equations, and the hypotheses made are tested experimentally on MHD flows in sections of sudden expansion and narrowing. The existence of M-shaped velocity profiles in a rectangular flow with sudden expansion was first established experimentally in 1965 by Branover and Shcherbinin; until now, however, a clear physical explanation of the reasons for such a sharp reconstruction of the flow has not been given. It is shown that M-shaped velocity profiles arise in the flow only if the component of the curl of the electromagnetic force projected on the y -axis is not equal to zero. Results were tested experimentally by studying the distribution of the potential gradients in segments of sudden contraction and narrowing a mercury flow. It was established that the formation of M-shaped velocity profiles occurs when the curl of electromagnetic forces is not equal to zero due to the distribution of electromagnetic forces in the space.

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1/2 058

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--SOME COMMON PROPERTIES OF MAGNETOHYDRODYNAMIC TURBULENCE IN TUBES
AND THEIR INVESTIGATION WITH THE AID OF CONDUCTION ANEMOMETERS -U-
AUTHOR-(04)-BRANDVER, G.G., GELFGAT, YU.M., KIT, L.G., TSINOBER, A.B.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, MEKHANIKA ZHIKOSTI I GAZA,
MAR.-APR. 1970, P. 35-44

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MAGNETOHYDRODYNAMIC FLOW, TURBULENT FLOW, ANEMOMETER, MAGNETIC
FIELD EFFECT, REYNOLDS NUMBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1188

STEP NO--UR/0421/70/000/000/0035/0040

CIRC ACCESSION NO--AP0124842

UNCLASSIFIED

2/2 058

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124842

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL CONSIDERATIONS CONCERNING THE MECHANISM RESPONSIBLE FOR THE SUPPRESSION OF MHD TURBULENCE BY A MAGNETIC FIELD. THE PRINCIPAL TENDENCIES CHARACTERISTIC OF THE REARRANGEMENT OF PERTURBED MOTION UNDER THE INFLUENCE OF A MAGNETIC FIELD ARE STUDIED ON THE BASIS OF RESULTS OF INVESTIGATIONS OF MHD TURBULENCE BY METHODS IN SPECTRAL THEORY. IT IS ASSUMED THAT TURBULENCE IS UNIFORM AND THAT THE MAGNETIC REYNOLDS NUMBER IS MUCH SMALLER THAN UNITY. THE THEORETICAL RESULTS OBTAINED ARE VERIFIED BY EXPERIMENTS PERFORMED BY MEANS OF A CONDUCTION ANEMOMETER. THE THEORY OF THIS DEVICE IS REVIEWED.

UNCLASSIFIED

USSR

UDC: 681.322.06

ARAYS, Ye. A. and GEL'FMAN, B. Sh.

"Program for Symbolic Integration"

Tomsk, V sb. Vopr. programmir. i avtomatiz. prektir. (Problems in Programming and Automation Practice--collection of works) Tomsk University, No 2, 1972, pp 152-161 (from RZh--Avtomatika, tele-mekhanika i vychislitel'naya tekhnika, No 12, 1973, Abstract No 12B81)

Translation: An algorithm is described for searching out original programs in the "Auto-Analytic" system. For the search, operations of generalized permutation according to a system of rules are used which either simplify the integrand or lead to the final result; the original yielded from the approximating polynomial is obtained as the final result.

The program of integration is formulated as the standard operator of the programming system; the approximation program is formulated as a separate operator and permits independent conversion. One illustration, bibliography of four. T. V.
1/1

USSR

UDC 541.49:535.343:546.92

GAVRILOVA, I. V., GEL'FMAN, M. I., IVANNIKOVA, N. V., KISELEVA, N. V.,
RAZUMOVSKIY, V. V., Leningrad Electrotechnical Communications Institute
imeni M. A. Bonch-Bruyevich

"Problem of the Trans-effect of Triphenylphosphite and Triphenylstibine"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol XVIII, No 1, 1973, pp 194-199

Abstract: The infrared spectra (500-200 cm^{-1}) of cation complexes of platinum trans- $[\text{Pt}(\text{NH}_3)_2\text{LCl}]\text{NO}_3$ (L = Ph_3P , Ph_3Sb) were measured. The ionization constants were found for the corresponding aquoions. A study was made of the thermodynamic stability of $[\text{Pt}(\text{NH}_3)_2(\text{Ph}_3\text{P})\text{Cl}]^+$ and $(\text{Pt}(\text{NH}_3)_3\text{Ph}_3\text{P})^{2+}$ in aqueous solutions. Both the σ -donor and π -acceptor capacity decrease in the order $\text{Ph}_3 > \text{Ph}_3\text{Sb}$. Both trends are exhibited to approximately the same degree for each of the ligands.

The constants for the compared complexes were as follows:

Trans- $[\text{Pt}(\text{NH}_3)_2(\text{Ph}_3\text{P})\text{H}_2\text{O}]^{2+}$ $\text{pK}_a = 5.92$; trans- $[\text{Pt}(\text{NH}_3)_2(\text{Ph}_3\text{P})\text{Cl}]^+$ $\text{pK}_{\text{Cl}} = 3.65$

$[\text{Pt}(\text{NH}_3)_3\text{H}_2\text{O}]^{2+}$ $\text{pK}_a = 5.50$; $[\text{Pt}(\text{NH}_3)_3\text{Cl}]^+$ $\text{pK}_{\text{Cl}} = 3.60$
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USSR

GAVRILOVA, I. V., et al., Zhurnal Neorganicheskoy Khimii, Vol XVIII, No 1, 1973, pp 194-199

A comparison of the thermodynamic characteristics with the spectroscopic characteristics shows that the frequency $\nu_{\text{Pt-Cl}}$ is primarily determined by the σ -donor properties of the ligand in the trans-position.

2/2

- 21 -

Acc. Nr:

AP0034216

Abstracting Service:

CHEMICAL ABST. 4-70

Ref. Code:

U.R.0078

G

71262j Synthesis, stability, and characteristics of the acid properties of tetra- and triacetoxime compounds of platinum(II). Stetsenko, A. I.; Strelin, S. G.; Gel'fman, M. I. (USSR). *Zh. Neorg. Khim.* 1970, 15(1), 134-8 (Russ). Aq. soln. of $[\text{Pt}(\text{HAox})_2\text{Cl}]\text{Cl}$ was treated with AgNO_3 , the AgCl was filtered off, and acetoxime (HAox) was added to the filtrate. Heavy white ppt., $[\text{Pt}(\text{HAox})_2(\text{Aox})_2]$ (I), formed when the soln. was cooled in ice bath. $[\text{Pt}(\text{HAox})_4]\text{Cl}_2$ (II) formed when I was treated with HCl . Instability const. (β) of II, given as $\log \beta^{-1}$ is 29.1 ± 0.4 (at 18° and ionic strength = 0.1). HMJR

REEL/FRAME

19710869

Acc. Nr:

AP0034210

Abstracting Service:

CHEMICAL ABST. 4-70

Ref. Code:

UR 0078

G

71266p Complexes of silver(I) with 5-fluorouracil. Gal'fman, M. Y.; Kustova, N. A. (USSR). *Zh. Neorg. Khim.* 1970, 15(1), 92-6 (Russ). $Ag_2(Fu-H)$, $K_2[Ag_2(Fu)_2(Fu-H)]$, and $K[Ag(Fu)_2]$ form by a reaction of $AgNO_3$ with 5-fluorouracil (FuH) (Fu and Fu-H are -1 and -2 anions, resp.), depending on initial concn. of the reagents. The instability const. of $K[Ag(Fu)_2]$, detd. potentiometrically, is 8.18. HMIR —

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REEL/FRAME

19710863

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USSR

UDC: 541.49:546.57

GEL'FMAN, M.I., and KUSTOVA, N.A.

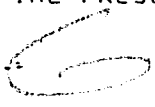
"Complex Compounds of Silver (I) With 5-Fluorouracyl"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 15, No 1, 1970, pp 92-96

Abstract: A study was made of the synthesis and physicochemical properties of complexes of silver with 5-fluorouracyl. Potentiometric studies of solutions containing silver nitrate and 5-fluorouracyl were undertaken to discover optimal conditions for conducting the syntheses. Preliminary experiments showed that electrode poisoning does not occur in the presence of 5-fluorouracyl. The reaction of silver nitrate with 5-fluorouracyl, depending on the ratio of the reagents present, leads to the formation of complexes as follows: $Ag_2(FU-H) \rightleftharpoons [FU = fluorouracyl]$, $K_2[Ag_2FU_2(FU-H)]$, $K[AgFU_2]$ HFU is a neutral molecule, but FU^- and $(FU-H)^{2-}$ are products of the cleavage of one and two protons. The total instability constant of the complex $K[AgFU_2]$ was determined by potentiometer using a silver electrode.

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- 21 -

1/2 008 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--BEHAVIOR OF ISOMERIC DIAMMINES OF PLATINUM (II) IN THE PRESENCE OF
ACTIVATED CARBON -U-
AUTHOR--GRINBERG, A.A., GELFMAN, M.I., PECHENYUK, S.I. 
COUNTRY OF INFO--USSR
SOURCE--ZH. NEORG. KHIM. 1970, 15(2), 487-9
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--PLATINUM, ACTIVATED CARBON, ISOMER

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1987/0307 STEP NO--UP/0078/70/015/002/0487/0489
CIRC ACCESSION NO--AP0103962
UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--11 SEP 70

CIRC ACCESSION NO--AP0103962

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ON A CONTACT WITH ACTIVATED C
(PREPD. FROM SACCHAROSE), CIS (PT(NH SUB3) SUB2 CL SUB2) ISOMERIZED IN
AQ. SOLN. TO TRANS (PT(NH SUB3) SUB2 CL SUB2).

UNCLASSIFIED

0123

1/2 011 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--ANTISTATIC POLY,VINYL CHLORIDE PLASTICS -U-

AUTHOR--(04)-GELFMAN, YA.A., GORBUNOVA, A.S., SHISHKINA, I.V., KUSKOVA,
V.P.
COUNTRY OF INFO--USSR

SOURCE--USSR 263,138
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI, 1970,
DATE PUBLISHED--04FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--POLYVINYL CHLORIDE, ANTISTATIC ADDITIVE, MONETHANOLAMINE,
OLEIC ACID, CHEMICAL PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/1479

STEP NO--UK/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128878

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AA0128878

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CAPACITY OF POLY(VINYL CHLORIDE) PLASTICS TO ACCUMULATE STATIC ELECTRICITY IS DECREASED BY THE ADDN. OF ANTISTATIC AGENTS, SUCH AS A 2:1 MIXT. OF OLEIC ACID AND ETHANOLAMINE. FACILITY: ALL UNION SCIENTIFIC RESEARCH INSTITUTE OF NEW CONSTRUCTION MATERIALS.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--DECREASE IN THE CAPACITY OF POLY,VINYL CHLORIDE PLASTICS TO
ACCUMULATE STATIC ELECTRICITY -U-
AUTHOR--(04)-GELFMAN, YA.A., GORBUNOVA, A.A., SHISHKINA, I.V., KUSKOVA,
V.P.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 263,137
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBKAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--04FEB70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--POLYVINYL CHLORIDE, STATIC ELECTRICITY, CHEMICAL PATENT,
ANTISTATIC ADDITIVE, STYRENE, BUTADIENE, BENZENE, COPOLYMER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1407

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128806

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AA0128806

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CAPACITY OF POLY(VINYL CHLORIDE) (I) PLASTICS TO ACCUMULATE STATIC ELECTRICITY WAS DECREASED BY THE ADDN. OF ANTISTATIC AGENTS, SUCH AS A MIXT. OF STYRENE, DIVINYLBENZENE COPOLYMER WITH NH SUB4 NO SUB3, CORRESPONDING TO 2-7 AND 0.5-3 WT. PERCENT I. FACILITY: ALL UNION SCIENTIFIC RESEARCH INSTITUTE OF NEW CONSTRUCTION MATERIALS.

UNCLASSIFIED

USSR

UDC 617-001.21-02:538.3-092:616-008.9

PAVLOVA, I. V., DROGICHINA, E. A., SADCHIKOVA, M. N., and GEL'FON, I. A., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

"The Role of Some Biochemical Disturbances in the Pathogenesis of Radiation Sickness"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 3, 1970, pp 20-23

Abstract: The results of an analysis of biochemical indices in 70 patients with different forms of chronic exposure to the effects of microwaves are reported. The patients were 28-39 years old, with 5-10 years of service. Several deviations from normal levels were observed: disproteinemia, due to increased β - and γ -globulins, and low mercury bichloride test, while the activity of liver enzymes appeared to be normal. About half of the patients showed high levels of cholesterol, and 2/3 had low blood levels and high urinary excretion of chlorides. Blood sugar levels after a glucose load were within the normal range, but atypical. These shifts indicate disruption of mechanisms regulating the activity of the sympathetic-adrenal system, including shifts in the functional condition of the hypothalamus-hypophysis-adrenal system.

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USSR

UDC 616.24-003.662-092.9-07:616.24-008.939.6

PAVLOVA, I. V., VASIL'YEVA, G. N., GEL'FON, I. A., and VERETINSKAYA, A. G.,
Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences
USSR, Moscow

"Lung Tissue Proteins in Experimental Silicosis"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 8, Aug 70, pp 25-29

Abstract: The chemical composition of lung tissue protein was studied in normal rats and in rats in which experimental silicosis had been produced. The insoluble hydroxyproline-rich collagen that formed in silicosis differed in composition from the collagen of the skin or other tissue only in that the hexose content was higher, although the hexose content was 15% lower for silicotic as compared to normal lungs. The content of hydroxyproline-containing insoluble proteins did not increase over period of up to 6 mo during the development of silicosis; the increase in weight of the lungs within that time was due to a uniform increase in the amount of all tissue constituents, including soluble proteins. As the content of insoluble collagens started to increase, the concentration of hydroxyproline-containing soluble proteins also increased. Insoluble collagen is identical to the collagen of other tissues in amino acid

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PAVLOVA, I. V., et al, Gigiyena Truda i Professional'nyye Zabolevaniya, No 8, Aug 70, pp 25-29

composition (including the content of proline, hydroxyproline, and tyrosine) and also did not differ in this respect from the insoluble collagen of normal lungs. The content of mucopolysaccharides increased in silicotic lungs, particularly after 6.5 mo. The changes in collagen stability during silicosis which were detected by morphological and histochemical methods are evidently due primarily to changes in the collagen fiber structure and only secondarily to changes in the protein structure.

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USSR

UDC 616.24-003.66-092.9-07:616.24-003.939.6-074

GEL'FON, I. A., ROZENBERG, P. A., and FEDOROVA, V. I., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR

"The Content of Scleroproteins and Silicon Dioxide in Lung Tissue of Rats With Experimental Silicosis and the Effect of UHF on These Indices"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 6, 1970, pp 43-45

Abstract: In rats with experimental silicosis, the elastic content of the lungs was substantially higher than in controls within a month of exposure to quartz dust. The increase in collagen was less pronounced at this time. Thereafter the elastin content gradually increased, but at a slower rate than collagen. Collagen content increased sharply after eight months. While the collagen level was rising, the dry weight of the lungs was increasing. UHF irradiation of the animals exposed to quartz dust markedly delayed the development of the silicotic process, slowed the weight increase of the lungs, and decreased the amount of collagen and elastin present, whereas UHF irradiation of healthy rats had no effect on the dry weight of the lungs or on their content of scleroproteins. The effect of UHF was more pronounced when used early and repeatedly. This inhibitory effect

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GEL'FON, I. A., et al, Gigiyena Truda i Professional'nyye Zabolevaniya, No 6, 1970, pp 43-45

of UHF is ascribed to the decrease in formation of scleroproteins resulting from the smaller accumulation in the lungs of the ascorbic acid required for their synthesis, proliferation of fibroblasts, and from the increased excretion of silica from the lungs.

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USSR

UDC 547.242

GEL'FOND, A. S., GALYAMETDINOV, YU. G., MIRONOVA, V. G., GATAULLINA, R. KH.,
and CHERNOKAL'SKIY, B. D., Kazan' Chemical-Technological Institute Imeni
S. M. Kirov

"Synthesis of Some Tertiary Arsines and Their Sulfides"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 9, Sep 72, pp 1962-1963

Abstract: A series of p- and m-substituted oxides and sulfides of aryldiethyl-
and aryldiphenylarsines has been synthesized by known methods. Yields and
melting points are tabulated.

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USSR

UDC 541.13:541.515:543.422.27

IL'YASOV, A. V., KARGIN, YU. M., MOROZOVA, I. D., CHERNOKAL'SKIY, B. D.,
YAFINA, A. A., MEL'NIKOV, B. V., GEL'FOND, A. S., MUKHTAROV, A. SH., and
GALYAMETDINOV, YU. G., Institute of Organic and Physical Chemistry Imeni A. Ye.
Arbuzov, Acad. Sc. USSR, and Kazan' Chemical-Technological Institute Imeni S. M.
Kirov

"Electrochemically Generated Free Radicals. 9 Communication. Reduction of Some
Nitrophenylarsine Derivatives and EPR Spectra of Their Anion Radicals"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 72,
pp 2174-2178

Abstract: The mechanism of polarographic reduction of nitrophenyldiethylarsines
and their oxides and sulfides in an aprotic medium was studied. These compounds
exhibit two reduction waves, the first one corresponding to a one-electron wave,
the process being reversible. The second wave is typical of a 3e-process. A
diagram for the sequential chemical processes of these compounds after the
capture of second electron has been proposed. Both waves represent a stepwise
oxidation of the unstable dianion of the substituted nitrobenzene; the phenyl
ring -- arsenic system remains untouched in this process. Novel organoarsine
anion radicals have been obtained by electrochemical reduction and studied by
the EPR method. Delocalization of the unpaired electron in these anion
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IL'YASOV, A. V., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 72, pp 2174-2178

radicals has been investigated analyzing possible reasons for a considerable decrease of the spin density on the arsenic atom during the transition from tetracoordinated arsenic atom of the anion radicals to a tri-coordinated one.

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USSR

UDC: 547.242

CHERNOKAL'SKIY, B. D., GEL'FOND, A. S., and KAMAY, GIL'M, Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Kinetics of the Reaction of Aryldialkylarsine Oxides with Butyl Iodide"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 1, Jan 70, pp 151-156

Abstract: Heating (p-substituted phenyl) diethylarsine oxides, where a nitro-group, bromine, or iodine are the substituents, with methyl, ethyl, or isopropyl iodides in acetone yielded a precipitate, after 24-30 hours, aryldiethyl (aryldiethylhydroxyarsoxy) arsonium iodides (I), which crystallized in 25-69% yields. A similar reaction of (p-dimethylaminophenyl) diethylarsine oxide (II) with isopropyl iodide gave a different product, (p-dimethylaminophenyl) diethylhydroxyarsonium iodide in 64% yield. Reactions of phenyldiethylarsine oxide or its p-tolyl analog with alkyl iodides gave noncrystallizing syrups. Kinetic measurements, carried out at 50°, indicated second- and third-order kinetics.

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Acc. Nr:

AP0049139

Abstracting Service:

CHEMICAL ABST. 5-78

Ref. Code:

UR0079

100850g Kinetics of the interaction of aryldialkylarsine oxides with butyl iodide. Chernokal'skii, B. D.; Gel'fond, A. S.; Kamai, G. (Kazan. Khim.-Tekhnol. Inst. im. KIPKh, Kazan, USSR). *Zh. Obshch. Khim.* 1970, 40(1), 151-6 (Russ). Heating 1 g p -O₂NC₆H₄AsEt₂O 28 hr with 1.7 g iso-PrI in Me₂CO gave 69% p -nitrophenyldiethyl(p -nitrophenyldiethylarsoxy)-arsonium iodide, m. 125°. Similarly was prepd. the p -bromophenyl (m. 126-7°) and p -chlorophenyl analogs, m. 125-6°. Reaction with p -Me₂NC₆H₄AsEt₂O gave p -Me₂NC₆H₄AsEt₂O-HI, m. 107-9°. Reactions of PhAsEt₂O or p -tolyl analog, with MeI, EtI or PrI gave noncrystallizing syrups. Reactions of ArAsR₂O with BuI were studied kinetically and formation of R₂As(OH)OAsR₂I products by the above reaction was examd. for ArAsR₂O (R = Et, Pr or Ph; Ar = Ph or p -NO₂, Br-, or Cl-, Me-, MeO-, Me₂N-, or o -MeC₆H₄). The overall reaction is described by apparent 3rd order equation, and groups that increase the nucleophilic nature of the arsine oxide change the kinetics to 2nd order. The rate consts. of the overall process are correlated readily with either Hammett or Taft substituent consts. of groups present in the aryl component.

G. M. Kosolapoff

REEL/FRAME
19800945

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USSR

UDC: 621.396.67:621.317.743(088.8)

GEL'FREYKH, G. B., SPITKOVSKIY, V. M., MUZALEVSKIY, Yu. S., Main Astronomic
Observatory (Pulkovo), Academy of Sciences of the USSR

"A Method of Determining the Position of the Focus in Unidirectional Antennas
With an Aperture Wider Than 10^4 Wavelengths"

USSR Author's Certificate No 261486, filed 23 Oct 68, published 22 May 70
(from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11B91 P)

Translation: The proposed method, which is applicable in the centimeter
and millimeter wavelength ranges, is a modification of the Hartman method.
As a distinguishing feature of the method, some of the reflecting elements
are taken out of the central section of the reflector; transit of a selected
extraterrestrial source of radio emission through the radiation pattern of the
antenna is registered for two positions of the reflector. One illustration.
N. S.

1/2. 024 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--X RADIATION AND RADIO EMISSION OF LOCAL SOLAR SOURCES -U-
AUTHOR-(03)-GELFREYKH, G.B., ZHITNIK, I.A., LIVSHITS, H.A.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, ASTRONOMICHESKIY ZHURNAL, VOL 47, NO 2, 1970, PP 329-339
DATE PUBLISHED-----70
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS
TOPIC TAGS--X RADIATION, RADIO EMISSION, SUNSPOT, HELIOGRAM, RADIO
TELESCOPE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FAME--2000/1399 STEP NO--UR/0033/70/047/002/0329/0339
CIRC ACCESSION NO--AP0125044
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0125044

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EMISSION OF SOURCES OVER THREE SPOT GROUPS IN THE X REGION AND CENTIMETER RADIO EMISSION RANGE DURING THE PERIOD 16-30 JUNE 1967 IS COMPARED. X RAY HELIOGRAMS WITH A RESOLUTION OF SIMILAR TO 3 PRIME IN THE REGIONS 8-14 AND 6-10 A WERE OBTAINED FROM THE SATELLITE "KOSMOS 166". THE SPECTRA OF THESE SAME SOURCES IN THE CENTINETER RANGE WERE OBTAINED FROM OBSERVATIONS WITH THE LARGE PULKOVO RADIO TELESCOPE WITH A RESOLUTION OF 1-3 PRIME. IT WAS ESTABLISHED THAT THE RELATIONSHIP BETWEEN THE DEVELOPMENT OF SPOT GROUPS, X RADIATION AND RADIO EMISSION IS EXTREMELY COMPLEX: IN ADDITION TO SIMULTANEOUS VARIATIONS THERE WAS A CASE OF DECREASE IN X AND RADIO EMISSION WITHOUT ANY CHANGES IN THE SPOT GROUP; IN ONE CASE THE RESTORATION OF RADIO EMISSION FLUXES WAS NOT ACCOMPANIED BY ANY CHANGE IN X RADIATION. IN THE FORMATION OF A NEW GROUP THE RADIO SOURCE DEVELOPED APPROXIMATELY A DAY AFTER THE APPEARANCE OF CONSIDERABLE X RADIATION. IT IS DEMONSTRATED WITHIN THE FRAMEWORK OF THE BREMSSTRAHLUNG MECHANISM AT SHOW WAVELENGTHS λ EQUALS 2-3.2 CM (AND NOT AT λ SIMILAR TO 10 CM, AS ASSUMED BEFORE), THAT RADIO OBSERVATIONS LIMIT THE EMISSION MEASURE TO INTEGRAL OF N SUBE PRIME2 DV IS SMALLER THAN OR SIMILAR TO 3 TIMES 10 PRIME48 CM PRIME NEGATIVE3, WHEREAS X RADIATION OBSERVATIONS INDICATE INTEGRAL OF N SUBE PRIME2 DV SIMILAR TO 3 TIMES 10 PRIME49 CM PRIME NEGATIVE3 AND T IS SIMILAR TO 2 TIMES 10 PRIME6K. FACILITY: MAIN ASTRONOMICAL OBSERVATORY ACADEMY OF SCIENCES USSR. FACILITY: PHYSICS INSTITUTE AND INSTITUTE OF TERRESTRIAL MAGNETISM. FACILITY: IONOSPHERE AND RADIO WAVE PROPAGATION.

UNCLASSIFIED

USSR

UDC: 621.317.6

GEL'FRYKH, G. B., SPITKOVSKIY, V. M., MUZALEVSKIY, YU. S. (Pulkovo) Main
Astronomical Observatory, Academy of Sciences of the USSR

"A Method of Determining the Location of the Focus of Aperture Antennas with an
Opening of More than 10^4 Wavelengths"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 5,
1970, pp 45-46, patent No 261486, filed 23 Oct 68

Abstract: This Author's Certificate introduces: 1. A method of determining the
location of the focus of aperture antennas with an opening of more than 10^4 wave-
lengths. The procedure is based on use of a modified Hartmann method, taking an
extraterrestrial radio emission source as the transmitter. As a distinguishing
feature of the patent, the error in determining the location of the focus is
reduced by removing a precalculated number of reflecting elements from the cen-
tral section of the reflector of an antenna of varying shape, and recording
transit of the source of radio emission at two positions of the reflector dis-
placed with respect to the approximately known location of the reflector focus.
2. A modification of this method in which the distinguishing feature is appli-
cability of the procedure to aperture antennas with a continuous, sheet-frame
or grid-frame reflector. The location of the focus is determined after the periph-
eral part of the unit has been set up and before the reflector is completely
assembled.

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1/2 024 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--X RADIATION AND RADIO EMISSION OF LOCAL SOLAR SOURCES -U-
AUTHOR--(03)-GELFREYKH, G.B., ZHITNIK, I.A., LIVSHITS, H.A.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, ASTRONOMICHESKIY ZHURNAL, VOL 47, NO 2, 1970, PP 329-339
DATE PUBLISHED-----70
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS
TOPIC TAGS--X RADIATION, RADIO EMISSION, SUNSPOT, HELIOGRAM, RADIO
TELESCOPE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/1399 STEP NO--UR/0033/70/047/002/0329/0339
CIRC ACCESSION NO--AP0125044
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0125044

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EMISSION OF SOURCES OVER THREE SPOT GROUPS IN THE X REGION AND CENTIMETER RADIO EMISSION RANGE DURING THE PERIOD 16-30 JUNE 1967 IS COMPARED. X RAY HELIOGRAMS WITH A RESOLUTION OF SIMILAR TO 3 PRIME IN THE REGIONS 8-14 AND 6-10 A WERE OBTAINED FROM THE SATELLITE "KOSMOS 166". THE SPECTRA OF THESE SAME SOURCES IN THE CENTINETER RANGE WERE OBTAINED FROM OBSERVATIONS WITH THE LARGE PULKOVO RADIO TELESCOPE WITH A RESOLUTION OF 1-3 PRIME. IT WAS ESTABLISHED THAT THE RELATIONSHIP BETWEEN THE DEVELOPMENT OF SPOT GROUPS, X RADIATION AND RADIO EMISSION IS EXTREMELY COMPLEX: IN ADDITION TO SIMULTANEOUS VARIATIONS THERE WAS A CASE OF DECREASE IN X AND RADIO EMISSION WITHOUT ANY CHANGES IN THE SPOT GROUP; IN ONE CASE THE RESTORATION OF RADIO EMISSION FLUXES WAS NOT ACCOMPANIED BY ANY CHANGE IN X RADIATION. IN THE FORMATION OF A NEW GROUP THE RADIO SOURCE DEVELOPED APPROXIMATELY A DAY AFTER THE APPEARANCE OF CONSIDERABLE X RADIATION. IT IS DEMONSTRATED WITHIN THE FRAMEWORK OF THE BREMSSTRAHLUNG MECHANISM AT SHOW WAVELENGTHS λ EQUALS 2-3.2 CM (AND NOT AT λ SIMILAR TO 10 CM, AS ASSUMED BEFORE), THAT RADIO OBSERVATIONS LIMIT THE EMISSION MEASURE TO INTEGRAL OF N SUBE PRIME2 DV IS SMALLER THAN OR SIMILAR TO 3 TIMES 10 PRIME48 CM PRIME NEGATIVE3, WHEREAS X RADIATION OBSERVATIONS INDICATE INTEGRAL OF N SUBE PRIME2 DV SIMILAR TO 3 TIMES 10 PRIME49 CM PRIME NEGATIVE3 AND T IS SIMILAR TO 2 TIMES 10 PRIME6K.

FACILITY: MAIN ASTRONOMICAL OBSERVATORY
ACADEMY OF SCIENCES USSR.
INSTITUTE OF TERRESTRIAL MAGNETISM.
FACILITY: PHYSICS INSTITUTE AND
FACILITY: IONOSPHERE AND
RADIO WAVE PROPAGATION.

UNCLASSIFIED

USSR

UDC 620503.4

GELIG, A. KH. (Leningrad)

"Limiting Restriction And Stability Of One Class Of Pulse Frequency Systems"

Avtomatika i telemekhanika, No 8, August 1972, pp 51-58

Abstract: With the aid of methods developed by the author in three previous papers [Avtomatika i telemekhanika, No 9, 1971; No 11, 1971; and No 3, 1972] estimates are obtained for the limiting deviation of coordinates and the sufficient frequency conditions required for stability of one class of pulse frequency modulation systems. Systems with a stable proper and astatic continuous linear part and asynchronous systems with many pulse elements are considered. 2 fig. 4 ref. Received by editors, 28 December 1971.

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Acc. Nr: **AP0040874**

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Ref. Code:

UR 0103

PRIMARY SOURCE: Avtomatika i Telemekhanika, 1970, Nr 1, pp 16-23

STABILITY OF MULTICONNECTED NONLINEAR CONTROLLED SYSTEMS /
WITH NONSINGLE EQUILIBRIUM POSITION

A. Kh. GELIG

A system with many discontinued nonlinearities is investigated. The linear part represents a lumped parameter system the characteristic equation of which together with the roots of the left halfplane may have one zero and two pure imaginary roots. There have been obtained sufficient frequency conditions of the point stability of a stationary in the whole ensemble lying on the cross-cut of the hyperplanes of the discontinuance of nonlinearities.

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UDC: 621.317.8

ANGAFOROVA, I. K., GELIKMAN, B. Yu.

"A Method for Accelerated Determination of the Quantitative Reliability Indices of Type MLT Resistors"

Elektron. tekhnika. Nauch.-tekhn. sb. Radiodetali (Electronic Technology. Scientific and Technical Collection. Radio Components), 1970, vyp. 4 (21), pp 87-94 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V297)

Translation: Type MLT resistors are used as an example in discussion of a method of predicting the reliability of radio components with a gradual change in the "suitability criterion" parameter during testing in a non-destructive mode of the load. A method is proposed for predicting the reliability and coefficient of aging of MLT resistors for 1000 hours of operation from the results of short-term tests for 100 hours. Resumé.

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USSR

UDC: 534.2

GELIS, V. I. and OBOZHENKO, I. L.

"Dispersion of a Plane Wave by an Acoustically Rigid Ellipsoid of Low Eccentricity"

Vestn. Kiyev. politekhn. in-ta. Ser. radiotekhn. i elektroakust.

(Herald of the Kiev Polytechnical Institute, Radio Engineering and Electroacoustics Series) No 9, 1972, pp 108-110 (from RZh--Fizika, No 9, 1972, Abstract No 9Zh503)

Translation: The authors consider the problem of the dispersion of a plane wave by an acoustically rigid ellipsoid with low eccentricity for an arbitrary angle of incidence of the wave. Based on the method of small perturbations, a solution of the problem using a system of eigenfunctions in a spherical system of coordinates is found. Computations are given for the potential of the scattered wave in the case of an axially incident plane wave on stretched-out and flattened ellipsoids with various eccentricities and wave dimensions.

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USSR

UDC 621.357.1.035.2.1661.418(088.8)

KHALILOV, V. R., ABUBAKIROVA, F. S., GELIYEVA, T. N., GARIFZYANOV, A. G.,
VALITOV, R. B., Sterlimakov Chemical Factory

"A Process for Impregnating Graphite Objects"

USSR Author's Certificate No 345093, Filed 24 Mar 70, published 10 Aug 72
(from Referativnyy Zhurnal -- Khimiya, No 8(III), 1973, Abstract No 8L256P)

Translation: A process is patented for the impregnation of graphite articles (rods used during the electrolysis of NaCl and the production of chlorine and sodium hydroxide) by polymerized flax oil in the presence of a catalyst. It is improved in that in order to increase strength and chemical stability of the articles, a peroxide compound, for example H_2O_2 , was used as a catalyst.

The process was carried out in the normal manner. The flax oil was first polymerized in the presence of an initiator - 1 to 3 weight % H_2O_2 (30%) at 80°

for 10-20 hours. The graphite rod was impregnated with a newly prepared polymer at 80° for 3 hours. After which, it was dried at the same temperature for 4 hours. Drying of the oil resulted in its uniformity in the graphite rod, chlorine and acid at high temperatures. The rod, impregnated with wax, was destroyed after 6 months in the vat at a temperature of 90°. The rods
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USSR

KHALILOV, V. R., et al., USSR Author's Certificate No 345093, filed 24 Mar 70, published 10 Aug 72

impregnated with the polymerized flax under the same conditions did not show signs of destruction.

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USSR

UDC: 621.396.822.01

GELL', P. P., LUNDIN, V. Z.

"Comparative Evaluation of the Effect of the Set Noise of the Amplifying Element in Some RC-Active Circuits"

V sb. Materialy Nauch.-tekhn. konf. Leningr. elektrotekhn. in-t svyazi. Vyp. 4 (Materials of the Scientific and Technical Conference of Leningrad Electrical Engineering Institute of Communications--collection of works, No 4), Leningrad, 1971, pp 19-24 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No 3A48)

Translation: An investigation is made of the noise level in RC-active circuits where the signal is taken off from the output of the amplifying element. It is shown that certain active RC filters, in particular the Sullen-Kay filter on a "unit" amplifier and the Rauch filter, are distinguished by elevated transmission of noises to the output of the amplifying element, which reduces the dynamic range of these filters. Resumé.

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Gellar, Ye. S.

Communications

BIOTHEMETRIC SYSTEM ELEMENTS

R. M. Bayevsky, Ye. S. Gellar, A. V. Lurkin

30.10.83 5:35 PM
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In recent years, the most varied biometric indices have been measured by means of biometric devices -- from simple pulse meters to the electroencephalogram of rats. A common characteristic of all these devices is the type to that the sensitive elements of the measuring system are of a defined distance from the research object and can not be regulated during the measurement process. On the other hand, in such as stereotyped periods of study of organisms under the conditions of their natural behavior, the most comfortable gathering of the information is, the more physiological the results obtained. Finally, it is important to note that depending on the purpose of the study and type of information gathered, the structure and complexity of the entire biometric system as a whole and its individual elements, in particular, change.

The devices providing for gathering of biological information and its conversion to a form suitable for further amplification and transmission over a radio channel can be called bioformation converters. As a rule, the output systems of bioformation converters are an electric voltage or current. The most important requirements on bioformation converters consist in maximum distortion of the measured parameters and maximum noiselessness. It is possible to calculate bioformation converters as the measuring devices relative to the subject and the measuring system which is simultaneously a filter and passes only given signals.

For example, the electrodes on the thorax of the examinee can, depending on the type of measuring circuit, insure recording of the electrocardiogram, an impedance pneumogram, and a rheocardiogram.

Consequently, the nature of the information obtained by means of biometric systems is determined not only by the sensitive element of the input but also by the characteristics of the structure of the system as a whole. All the measured medical-physiological parameters can be divided into two large groups: a) measured directly, b) measured indirectly.

GELLER, Ye. S.

Communications

STRUCTURE AND CLASSIFICATION OF BIOTELEMETRIC SYSTEMS¹

V. V. Parin, N. H. Boyevskiy, Ye. S. Geller

pp. 35-54

Structure of Biotelemetric Systems

The structure of a biotelemetric system can be presented in accordance with the block diagram of the communication channel proposed by Geller in the form of five lines: 1) the data source (sender); 2) the transmitter; 3) the communications channel; 4) the receiver; 5) the formation of the information (consumer).

Each of these links is characterized by a number of parameters specific to the given type of biotelemetric system. For example, let us compare two systems: one for recording the electrocardiogram of astronauts in flight and the other for recording the bioelectricity of the brain of a cat under the conditions of free movement.

Different sources of information give rise to significant differences in the design and arrangement of the electrodes and the transmitter. The transmitter attached to a cat must be not only miniature and light but also operate reliably in the case of quick movements (jumps) of the animal and insure high-quality signal transmission when the subject assumes various positions relative to the receiving antenna.

The transmission of data from space imposes special requirements on the receiving and transmitting equipment, on the communications channel, on the power supplies and on the electrodes on the astronaut's body. The result is a very important to create a proper scientific classification of biotelemetric systems which will permit standardization of the requirements on devices and elements of them.

¹Material presented by V. A. Fedorov will be used in this chapter.

GELLER, Ye. S.

Communications

См. также 55254
6 мая 72.

BRIEF DISCUSSION OF GENERAL COMMUNICATIONS
THEORY AND INFORMATION THEORY

pp 12-34

Ye. S. Geller

The purpose of any type of communications is the transmission of information from the sender to the receiver. The concept of "information" can roughly be defined as data which are the object of gathering, transmission, storage and processing.

Information exists either in static form when it is stored (in the form of recording, tapes, and so on) or in dynamic form when it is transmitted (in the form of physical, physiological, chemical and other processes).

In 1927, Hartley already proposed a "quantitative measure permitting comparison of the capacity of different systems to transmit information." This measure was the starting point of information theory. If a cell in which information is stored has n possible states, then two such cells will have n^2 possible states, and m cells, n^m possible states. This means that there is an exponential relation between the number of cells and the number of possible states. Considering this fact, Hartley introduced a logarithmic measure of information capacity:

$$C = \log N, \quad (1)$$

where N is the number of different states of the system.

This measure corresponds to the requirement of additivity, that is, the amount of information stored in m identical cells is m times greater than in one cell. Actually, the information capacity of a system comprising m cells and having $N = n^m$ states is equal to the capacity of one cell multiplied by the number of cells:

$$C = \log n^m = m \cdot \log n. \quad (2)$$

If we take the logarithm to the base 2, the information capacity C will be the number of elementary binary cells each of which has two possible states. The capacity of this simplest binary cell has been given the name "binary unit," or "bit."

GELLAR, Ye. S

621212
S. M. Lapev, Ye. S. Gellar, N. V. Linnik
BIOPHYSIC SYSTEM ELEMENTS

SOI 5 PMS 55534

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PP 55-100

In recent years, the most varied biophysical indexes have been revealed by means of biophysical devices -- from the remote index ability in man to electroencephalograms of rats. A common characteristic of all the studies of this type is that the sensitive elements of the measuring systems are at a defined distance from the researched and can not be regulated during the measurement process. On the other hand, inasmuch as biophysics permits the study of organisms under the conditions of their natural behavior, the "remote" character of the gathering of the information is the more "biophysical" in results character. Finally, it is important to note that depending on the purpose of the study and type of information gathered, the structure and complexity of the entire biophysical system as a whole and its individual elements, in particular, change.

The devices providing for gathering of biophysical information and its conversion to a form suitable for further amplification and transmission via a radio channel can be called biotransformation converters. As a rule, the output systems of biotransformation converters are an essential portion of current. The most important requirements on biotransformation converters consist in high linearity of the measured parameters and a strong noise resistance. It is possible to calculate biotransformation converters as an automatic device because the type of the measuring system which is simultaneously a filter which passes only given signals.

For example, the electrodes on the skin of the examined can, connected in the form of measuring circuit, serve as a kind of the biotransformation converter and a mechanical arm.

Consequently, the nature of the information obtained by means of biophysical systems is determined not only by the sensitive element at their input but also by the characteristics of the structure of the system as a whole. All the measured biophysical parameters can be divided into two large groups: a) measured directly; b) measured indirectly.

USSR

UDC 677.494.745.32-96.004.14:661.183.123.2

ZGIBNEVA, Zh. A., GELLER, A. A., GELLER, B. E., POLOVNIKOVA, M. V.,
YERESHCHENKO, A. G., and GHOMENKO, R. I., Tashkent Institute of Textiles
and Light Industry

"Fibrous Cation Exchange Materials Based on Nitrona"

Moscow, Khimicheskiye Volokna, No 5, 1973, pp 7-9

Abstract: The high chemical stability of the hydrocarbon chains of polyacrylonitrile and the high reactivity of the nitrile groups may be used to prepare ion exchange materials based on the polymers and copolymers of acrylonitrile fibers. The reaction is base catalyzed. Temperature and concentration were determined which would optimize the physical mechanical properties of the obtained fibers. The ion-exchange capacity ranged from 0.3 to 3 meq/g, the higher values generally occurring at high temperatures or high concentrations of NaOH. Intense chemical modification in the polymer chain occurred during the saponification process. These changes were examined using IR spectra and thermograms. The principal reaction path for the base saponification of the copolymer was the hydrolysis of the nitrile and the mixed-ester groups.

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- 11 -

USSR

UDC 677.494.745.32-96.021.12

ZGIBNEVA, Zh. A., GELLER, A. A., GELLER, B. E., AHUNOVA, B. A., YUNUSOV, B. H., Tashkent Institute of Textile and Light Industry

"Modifications of Polyacrylonitrile Fibers With Organophosphorus Compounds"

Moscow, Khimicheskiye Volokna, No 6, 1973, pp 51-52.

Abstract: Dimethyloxy-2,2,2-trichloro-1-hydroxyethylphosphonate (chlorophos) was used to treat a polyacrylonitrile fiber (92.2% acrylonitrile, 6.3% methyl acrylate). It was found that the amount of phosphorous adsorbed by the fiber followed a Langmuir curve, and that the limit of saturation of the fiber is determined by the size of the active internal surface of the fiber. Fiber treated with chlorophos was found to be less flammable, to have a lower glass transition temperature, lower coefficient of internal stress, a higher thermal index, and to show more antimicrobial activity than the unmodified fiber. At temperatures up to 100°C, chlorophos acted to plasticize the fiber. The physico-mechanical properties of the fiber remained essentially unchanged by treatment with chlorophos.

USSR .

UDC 677.494.745.32

ABDURAKHMANOVA, SH. G., ~~GELLER, A. A.~~, GELLER, B. E., Tashkent
Institute of the Textile and Light Industry

"Sorption of Cation Exchange Resins by Fibrous Materials Based
on Acrylonitrile Polymers and Copolymers"

Tashkent, Uzbekskiy Khimicheskiy Zhurnal, No 3, 1971, pp 33-36

Abstract: Discussed are the sorption kinetics of Cr^{3+} , Zn^{2+} , Pb^{2+} and Sn^{4+} cations from the aqueous solutions of the corresponding salts at 25-75°C using polyacrylonitrile-base fiber(I) with a specific surface of 42.0 m^2/g and 92% acrylonitrile copolymers, 6.7% methyl acrylate and 1.3% itaconic acid(II) with a specific surface of 46.0 m^2/g . Untreated freshly prepared polyacrylonitrile fiber is a fairly loose, oriented gel-like, polymeric substrate. The salt concentration in the experimental solutions ranged from 0.005 to 3 n. The experimental details cited are, as well as the data on testing time, amount of salt absorbed and temperatures. A table shows the amounts of cations on the fiber (both rated and actual) as a function of salt concentration in the solution. At 1/2

- 1 -

USSR

ABDURAKHMANOVA, SH. G., et al, Uzbekskiy Khimicheskiy Zhurnal, No 3, 1971, pp 33-36

low cation concentrations in the solution (0.005-0.01 n.) the actual amount of absorbed metal appears to be higher than the rated. As the salt concentration is increased, the amount of the absorbed metal becomes lower than the rated which may be related to a lower degree of dissociation of salts in fairly concentrated solutions. The active cation absorption from low-concentration solutions may be attributed to the process of salification and complex formation with CN groups. It is shown that the copolymer fiber II absorbs 1.5 or twice the amount of metal ions of fiber I. The multiple plasticized drawings, treatment temperatures and the anion combined with the metal have no appreciable effect on the balanced absorbed amount of metal.

2/2

Miscellaneous

USSR

UDC 669.15'25-194:621.787.7

VINOKUR, B. B., GRAUN, M. P., KHIL'CHEVSKAYA, T. V., GELLER,
A. L., KULICHENKO, V. P., and SHIYANOVSKIY, V. I., Institute
of Casting Problems, Academy of Sciences, Ukrainian SSR

"Carbide Transformations in Complexly Alloyed Steel Contain-
ing One Percent Chromium"

Moscow, Izvestiya VUZ, Chernaya Metallurgiya, No 10, 1973,
pp 104-108

Abstract: On the basis of studying carbide deposition by
chemical and x-ray structural methods the authors concluded
that a special chromium carbide Me_7C_3 is formed. The methods
used include microdiffraction of carbides extracted into a
replica, distortions of the second and third type, modifica-
tions in the electrical resistance, coercive forces, micro-
hardness, expanding the steel in the state of quenching and
annealing at temperatures of 400-650° C. Under ordinary an-

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USSR

VINOKUR, B. B., et al., Izvestiya VUZ, Chernaya Metallurgiya, No 10, 1973, pp 104-108

nealing conditions this carbide is formed by a gradual restructuring of the iron carbide in proportion to how much it is doped with chromium, manganese, and tungsten. A coherent bond is retained between the lattices. Lengthy annealing at 650° C will result in a separation of trigonal chromium carbide.

Table 1 compares the chemical composition of the carbide phase as a function of annealing temperature; Table 2 identifies the carbide phases after different annealing conditions. Figure 1 shows the influence of annealing temperature on change in the fine crystal structure and certain physical characteristics of a steel. Figure 2 is an electron diffraction pattern of the carbides and an identification of the carbide phases following annealing at 650° C for a period of four hours.

The article contains 2 illustrations, 2 tables, and 9 bibliographic references.

2/2

USSR

UDC 620.17.172

BRAUN, M. P., VINOKUR, B. B., KHAUSTOVA, L. V., and GELLER, A. L.,
Kiyev, Institute of the Problems of Casting of the Academy of
Sciences of the Ukrainian Soviet Socialist Republic

"On the Tendency to Brittle Failure of Compositely Alloyed Steels"

Kiyev, Problemy Prochnosti, No. 9, Sep 71, pp 79 -83

Abstract : The tendency to brittle failure was experimentally investigated on a great number of compositely alloyed steels which contained Cr, Cr and Mn, Cr and Mn and additional alloying with Ni or Si, and on standard industrial steels 40KhN, 30KhGSA, 35KhNM, and 34KhN3M. A reduced softness coefficient in testing notched specimens is considered a brittleness criterion and the tendency of steel to brittle failure is rated by a coefficient β characterizing the notch effect and determined by a method of Davydenkov-Belyayev. The investigation results are discussed by reference to tabulated data and diagrams showing the character of tested specimens and effects of the notch form and depth on the brittleness of steel. Five illustr., three tables, ten biblio. refs.

1/1

USSR

UDC 621.791.011:669.15-194

3
BRAUN, M. P., VINOKUR, B. B., BONDAR', V. T., Institute of Casting Problems, Academy of Sciences Ukrainian SSR, GELLER, A. L., Donets Scientific Research Institute of Ferrous Metallurgy, KONDRASHEV, A. I., PILYUSHENKO, V. L., TKACHEV, V. V., New Kramatorsk Machinery Plant imeni V. I. Lenin

"Strength and Embrittlement of Welded 25Kh2GMT Steel in Large Cross Sections"

Kiev, Avtomaticheskaya Svarka, No 3, Mar 71, pp 18-22

Abstract: A study was made of the tendency of 25Kh2GMT steel toward temper brittleness, cold brittleness, and notch sensitivity in various parts of the cross section of a large sample 1,000 mm in diameter. The relation of these characteristics to the metallurgical nature and structural conversions in the steel during heat treatment of large products was established. The tests showed the possibility of safe utilization of 25Kh2GMT steel in large cross sections.

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USSR

UDC 677.494.745.32-96.021.12

ZGIBNEVA, Zh. A., GELLER, A. A., GELLER, B. E., AHUNOVA, B. A., YUNUSOV, B. H., Tashkent Institute of Textile and Light Industry

"Modifications of Polyacrylonitrile Fibers With Organophosphorus Compounds"

Moscow, Khimicheskiye Volokna, No 6, 1973, pp 51-52.

Abstract: Dimethyloxy-2,2,2-trichloro-1-hydroxyethylphosphonate (chlorophos) was used to treat a polyacrylonitrile fiber (92.2% acrylonitrile, 6.3% methyl acrylate). It was found that the amount of phosphorous adsorbed by the fiber followed a Langmuir curve, and that the limit of saturation of the fiber is determined by the size of the active internal surface of the fiber. Fiber treated with chlorophos was found to be less flammable, to have a lower glass transition temperature, lower coefficient of internal stress, a higher thermal index, and to show more antimicrobial activity than the unmodified fiber. At temperatures up to 100°C, chlorophos acted to plasticize the fiber. The physico-mechanical properties of the fiber remained essentially unchanged by treatment with chlorophos.

USSR

UDC 677.494.745.32-96.004.14:661.183.123.2

ZGIBNEVA, Zh. A., GELLER, A. A., GELLER, B. E., POLOVNIKOVA, M. V.,
YERESHCHENKO, A. G., and GHOMENKO, R. I., Tashkent Institute of Textiles
and Light Industry

"Fibrous Cation Exchange Materials Based on Nitrona"

Moscow, Khimicheskiye Volokna, No 5, 1973, pp 7-9

Abstract: The high chemical stability of the hydrocarbon chains of polyacrylonitrile and the high reactivity of the nitrile groups may be used to prepare ion exchange materials based on the polymers and copolymers of acrylonitrile fibers. The reaction is base catalyzed. Temperature and concentration were determined which would optimize the physical mechanical properties of the obtained fibers. The ion-exchange capacity ranged from 0.3 to 3 meq/g, the higher values generally occurring at high temperatures or high concentrations of NaOH. Intense chemical modification in the polymer chain occurred during the saponification process. These changes were examined using IR spectra and thermograms. The principal reaction path for the base saponification of the copolymer was the hydrolysis of the nitrile and the mixed-ester groups.

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- 11 -

USSR .

UDC 677.494.745.32

ABDURAKHMANOVA, SH. G., GELLER, A. A., GELLER, B. E., Tashkent
Institute of the Textile and Light Industry

"Sorption of Cation Exchange Resins by Fibrous Materials Based
on Acrylonitrile Polymers and Copolymers"

Tashkent, Uzbekskiy Khimicheskiy Zhurnal, No 3, 1971, pp 33-36

Abstract: Discussed are the sorption kinetics of Cr^{3+} , Zn^{2+} , Pb^{2+} and Sn^{4+} cations from the aqueous solutions of the corresponding salts at 25-75°C using polyacrylonitrile-base fiber(I) with a specific surface of 42.0 m^2/g and 92% acrylonitrile copolymers, 6.7% methyl acrylate and 1.3% itaconic acid(II) with a specific surface of 46.0 m^2/g . Untreated freshly prepared polyacrylonitrile fiber is a fairly loose, oriented gel-like, polymeric substrate. The salt concentration in the experimental solutions ranged from 0.005 to 3 n. The experimental details cited are, as well as the data on testing time, amount of salt absorbed and temperatures. A table shows the amounts of cations on the fiber (both rated and actual) as a function of salt concentration in the solution. At 1/2

- 1 -

USSR

ABDURAKHMANOVA, SH. G., et al, Uzbekskiy Khimicheskiy Zhurnal,
No 3, 1971, pp 33-36

low cation concentrations in the solution (0.005-0.01 n.) the actual amount of absorbed metal appears to be higher than the rated. As the salt concentration is increased, the amount of the absorbed metal becomes lower than the rated which may be related to a lower degree of dissociation of salts in fairly concentrated solutions. The active cation absorption from low-concentration solutions may be attributed to the process of salification and complex formation with CN groups. It is shown that the copolymer fiber II absorbs 1.5 or twice the amount of metal ions of fiber I. The multiple plasticized drawings, treatment temperatures and the anion combined with the metal have no appreciable effect on the balanced absorbed amount of metal.

2/2

1/2 019 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--LOCAL RESISTANCES DURING THE FLOW OF SPINNING SOLUTIONS -U-

AUTHOR--(02)-LEVSH, V.I., GELLER, B.E.

COUNTRY OF INFO--USSR

SOURCE--KHIM. VOLOKNA 1970, (1), 17-18

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TEXTILE ENGINEERING, CELLULOSE RESIN, FLOW RATE, SODIUM
HYDROXIDE, POLYVINYL ALCOHOL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1984/1819

STEP NO--UR/0183/70/000/001/0017/0018

CIRC ACCESSION NO--AP0100393

UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100393

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LAMINAR FLOW OF 7PERCENT CM CELLULOSE SOLN. IN 6PERCENT NAOH, 18.5PERCENT AQ. POLY(VINYL ALC.), AND VISCOSOLNS. WAS STUDIED AT THE INLET OF A TUBE, AS WELL AS DURING SUDDEN FLUX EXPANSION AND CONTRACTION. THE PRESSURE GRADIENT IN THE TUBE WAS DEPENDENT ON THE FLOW RATE OF THE POLYMER SOLNS. AND THEIR PHYSICOCHEM. PROPERTIES. THE MAGNITUDES OF LOCAL RESISTANCES, EXPRESSED IN TERMS OF AN EQUIV. DIAM. FOR ALL OF THE SOLNS. CITED, WERE INDEPENDENT OF FLOW RATE.

UNCLASSIFIED

1/2 . 020 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--DYEING OF PROTEIN AND POLYAMIDE FIBERS -U-
AUTHOR--(04)-GELLER, B.E., YERESHCHENKO, A.G., STEPANTSOVA, N.P.,
SHALAMOVA, A.I.
COUNTRY OF INFO--USSR
SOURCE--U.S.S.R. 265,064
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI, 1970 47
DATE PUBLISHED--09MAR70

SUBJECT AREAS--MATERIALS, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DYE, PROTEIN, POLYAMIDE RESIN, SYNTHETIC FIBER, CHEMICAL
PATENT, POTASSIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3007/0859

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0136293

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AA0135293
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PROTEIN AND POLYAMIDE FIBERS ARE
DYED WITH AMINO CONTG. ACIDS AND BASIC DYES. AFTER DYEING, THE
COLORATION IS STRENGTHENED AND STABILIZED BY TREATMENT IN A REDOX
MEDIUM, I.E. A SOLN. CONTG. K PERSULFATE AND K METABISULFITE.

UNCLASSIFIED

1/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--STUDY OF DYEING LAVSAN FIBER WITH DIRECT DYES IN THE PRESENCE OF
HEXAMETHYLENE DIISOCYANATE USING IR SPECTROSCOPY -U-
AUTHOR--(03)-ERESHCHENKO, A.G., BELOVA, T.B., GELLER, B.E.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., TEKHNOL. TEKST. PROM. 1970, (1), 88-92
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, CHEMISTRY
TOPIC TAGS--POLYETHYLENE TEREPHTHALATE, SYNTHETIC FIBER, ORGANIC
ISOCYANATE, DYE, IR SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0774 STEP NO--UR/0324/70/000/001/0088/0092
CIRC ACCESSION NO--AT0132872
UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132872

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LAVSAN (POLY(ETHYLENE TEREPHTHALATE)) (I) FIBERS WERE ACTIVATED BY IMPREGNATION AT 25DEGREES WITH A 5PERCENT SOLN. OF OCN(CH SUB2) SUB6 NCO IN ACETONE, WHICH CONVERTED THE END GROUPS TO NCO. THE ACTIVATED I WAS THEN DYED READILY WITH DIRECT LIGHTFAST VIOLET 2KM. THE DYE REACTED WITH THE END GROUPS GIVING STABLE CO SUB2 NH(CH SUB2) SUB6 NHCO SUB2 R GROUPS (R IS THE DYE RESIDUE), WHICH WAS VERIFIED BY IR SPECTROSCOPY. I FIBERS TREATED WITH PHNCO COULD NOT BE DYED WITH DIRECT DYES. FACILITY: TASHKENT. INST. TEKST. LEGK. PROM., TASHKENT, USSR.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--EFFECT OF POLYETHYLENE OXIDE ON THE SAPONIFICATION OF PRIMARY
CELLULOSE ACETATES -U-
AUTHOR--(02)-GELLER, B.E., POLOVNIKOVA, M.V.
COUNTRY OF INFO--USSR
SOURCE--PLAST. MASSY 1970, (2), 22-3
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--POLYMER, ETHYLENE OXIDE, CELLULOSE RESIN, ACETATE,
SAPONIFICATION, REACTION KINETICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/0672 STEP NO--UR/0191/70/000/002/0022/0023
CIRC ACCESSION NO--AP0119580
UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119580

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF ACIDIC SAPON. OF PRIMARY CELLULOSE ACETATES (I) IN ACOH SOLNS. WAS STUDIED IN THE PRESENCE OF POLY(ETHYLENE OXIDE) (II) OF MOL. WT. 4500. ADDN. OF 5PERCENT II INTO I SOLNS. GAVE INCREASED STRUCTURAL HOMOGENEITY AND WAS CONDUCTIVE TO THE PREPN. OF CHEM. HOMOGENEOUS SECONDARY I. SECONDARY I, SAPOND. IN THE PRESENCE OF II, WERE MORE SOL. IN ME SUB2 CO AND EXHIBITED GREATER TRANSPARENCY AND FILTERABILITY.

UNCLASSIFIED

USSR

UDC 537:226+537:311:33]:[537+535

GELLER, I. Kh., KRUTENYUK, V. A., KRUTENYUK, Ye. G., TALIBI, M. A.

"The Role of Cadmium in the Formation of the Se-CdSe Rectifying Junction"

Tr. Kafedry fiz. Mariysk. ped. in-ta, [Works of the Physics Department of Mariysk Pedagogics Institute], Yoshkar-Ola, 1970, pp 74-87, (Translated from Referativnyy Zhurnal Fizika, No 10, 1970, Abstract No 10 Ye 943 by B. A. Osadin).

Translation: The influence of the thickness of Cd, its oxidation, and also the oxidation of the Bi layer on the rectifying properties of the p-n heterocontact of Se-rectifying elements with Cd and Bi-electrodes were studied. After electrical forming (transmission of a reverse current), as the thickness of the Cd layer was increased from 1.64 to 3.88 μ , a decrease in the reverse current was observed as a result of thickening of the area of the space charge, resulting from reactive diffusion between Cd and Se. It is shown that the presence of a CdO film on the Se side influences the electrophysical properties of the blocking layer both directly and as a result of a change in the nature of the spherulitic crystallization of the

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USSR

GELLER, I. Kh., et al, Tr. Kafedry fiz. Mariysk. ped. in-ta, Yoshkar-Ola, 1970, pp 74-87

Se-rectifier elements. The CdO oxide film in Se elements is one cause of layer separation. Oxidation of the Bi surface on the side of the ohmic contact with the Se also changes the nature of spherulitic crystallization of Se. The presence of a reverse-connected rectifying BiO-Se layer with an Se-CdSe p-n junction significantly changes the static volt-ampere characteristic of the entire system. The acceptor impurity in the Se does not eliminate the anisotropy of the BiO-Se conductivity.

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USSR

UDC 614.79:613.12(575.1)

ATABAYEV, Sh. T. and GELLER, I. M., Uzbek Scientific Research Institute of Sanitation, Hygiene, and Occupational Diseases, Tashkent

"Main Hygiene Problems in the Planning of Settlements in the Hot Climate of Uzbekistan"

Moscow, Gigiyena i Sanitariya, No 2, 1971, pp 3-6

Abstract: An inspection of a number of state farms built from 1958 to 1968 in Uzbekistan revealed many design and structural defects affecting the comfort and health of the farm workers. Poorly chosen materials and architectural plans resulted for the most part in the construction of houses that are too hot in the summer and too cold in the winter. Slow installation of sewer pipes and inadequate water sources led to the improvisation of facilities well below minimum sanitary standards. Another serious shortcoming is the absence of buffer zones between the fields and residential areas. The result is that the people are frequently exposed to dangerous concentrations of insecticides sprayed on crops, especially when planes are used for this purpose. The article concludes with concrete recommendations to planners of rural development.

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- 74 -

USSR

UDC 615.285.7.099.097

NIKOLAYEV, A. I., SUBKHANKULOVA, F. B., and GELLER, I. S.. Chair of General and Radiation Hygiene, Tashkent Medical Institute

"Immune Reactions During Intoxication With the Pesticides Methylmercaptophos, Phosphamide, Aldrin, and Monuron"

Moscow, Farmakologiya i Toksikologiya, Vol 33, No 6, Nov/Dec 70, pp 737-741

Abstract: Changes in the immunological specificity of tissue proteins in mice and rats poisoned with methylmercaptophos, phosphamide, aldrin, and monuron were studied. An alteration in the immunological specificity of liver proteins was noted on the first day after intoxication due to chemical binding of pesticides by proteins and, on subsequent days, to destructive changes in the tissues. This sequence was similar to that established by Nikolayev et al in a study of autoimmune processes upon introduction into the organism of antibiotics, carcinogens, and substances with antitumor activity. Anti-hepatic autoantibodies appeared in the blood serum of animals on the 7th day after initiation of intoxication, reaching their maximum titer on the 30th day of the experiment and decreasing in concentration thereafter during the continued action of the pesticides. The titer of antihepatic autoantibodies in

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USSR

NIKOLAYEV, A. I., et al, Farmakologiya i Toksikologiya, Vol 33, No 6, Nov/Dec 70. pp 737-741

the blood serum in connection with continuous administration of the pesticides was studied on rabbits given methylmercaptophos or phosphamide for 15 days and rats receiving monuron for 4 months. Blood sera containing antihepatic auto-antibodies depressed the resorption and excretory function of the liver in healthy animals, produced morphological changes in the liver, and inhibited redox processes in tissues.

2/2

- 38 -

1/2 020 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--ROLE OF THE HEREDITARY FACTOR IN THE DEVELOPMENT OF ULCER DISEASE
-U-
AUTHOR--GELLER, L.I., KOZLOVA, Z.P. G
COUNTRY OF INFO--USSR
SOURCE--VRACHEBNOYE DELO, 1970, NR 3, 41-43
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--DIGESTIVE DISEASE, DUODENUM, LESION, HEREDITARY DISEASE

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1986/0950 STEP NO--UR/0475/70/000/003/0041/0043
CIRC ACCESSION NO--AP0102889
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0102889

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PATIENTS WITH DUODENAL ULCER HEREDITARILY BURDENED SHOWED MORE FREQUENTLY AS COMPARED WITH NON HEREDITARILY BURDENED PATIENTS. TRYING TO EXPLAIN THE POSSIBLE MECHANISM OF THIS PHENOMENON THE AUTHORS REVEALED THAT GENETICALLY BURDENED PATIENTS SHOW DURING THE REMISSION PERIOD LEVELS OF ACIDFORMING ACTIVITY OF GASTRIC MUCOSA WHICH DO NOT DIFFER FROM THOSE OBSERVED DURING EXACERBATION. GENETICALLY NON BURDENED PATIENTS SHOW A TENDENCY TO SOME REDUCTION OF THE PRODUCTION OF HYDROCHLORIC ACID DURING THE REMISSION PERIOD AS COMPARED WITH THE EXACERBATION PERIOD.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--DISORDERS OF THE SEROTONIN METABOLISM IN CIRRHOSIS OF THE LIVER -U
AUTHOR--(03)-GELLER, L.I., KOZLOVA, Z.P., KONTSEVAYA, N.G.
COUNTRY OF INFO--USSR
SOURCE--SOV MED 33(3): 19-21. 1970.
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--LIVER, CIRRHOSIS, SEROTONIN, METABOLISM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605004/E04 STEP NO--UR/0399/70/033/003/0019/0021
CIRC ACCESSION NO--AP0139661
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0139661

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATIONS MADE IN 34 PATIENTS WITH LIVER CIRRHOSIS WHICH DEVELOPED AFTER EPIDEMIC HEPATITIS (ACUTE VIRAL HEPATITIS) SHOWED A CONSIDERABLE FALL OF SEROTONIN BINDING PROPERTIES OF THE BLOOD SERUM BY COMPARISON WITH HEALTHY PERSONS. IN LIVER CIRRHOSIS WITH ESOPHAGEALGASTRIC HEMORRHAGES STEMMING FROM PORTAL HYPERTENSION PREVAILING IN THE CLINICAL PICTURE, THE DEGREE OF AN INCREASED BLOOD SERUM MONOAMINOXIDANSE ACTIVITY AND URINARY EXCRETION OF THE BASIC METABOLITESEROTONIN (5,OXYINDOYL ACETIC ACID) IS SUBSTANTIALLY GREATER THAN IN PATIENTS SUFFERING FROM LIVER CIRRHOSIS WITH MARKED HEPATIC INSUFFICIENCY WITHOUT NOTICEABLE PORTAL HYPERTENSION. IT IS TO BE PRESUMED THAT DISTURBED SEROTONIN METABOLISM PLAYS A DEFINITE ROLE IN THE DEVELOPMENT AND PROGRESSING HEMORRHAGES OF PORTAL GENESIS IN PATIENTS WITH LIVER CIRRHOSIS. ATTEMPTS AT CLINICAL APPROBATION OF ANTISEROTONIN PREPARATIONS IN LIVER CIRRHOSES WITH PORTAL HYPERTENSION SHOULD BE CONSIDERED FULLY JUSTIFIABLE. FACILITY: NARUSHENIYA OBMENA SEROTONINA SEROTONINA PRI TSIRROZE PECHENI.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--PREPARATION AND PROPERTIES OF AQUEOUS BUTYL RUBBER DISPERSIONS -U-

AUTHOR--(05)-GUSTOVA, L.P., GELLER, T.L., MAZINA, G.R., SANDOMIRSKIY, D.M.,
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PROCESSING DATE--16OCT70

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONDITIONS OF PREPARATION OF BUTYL RUBBER DISPERSIONS BY MILLING HAVE BEEN STUDIED. GREATER RIGIDITY OF POLYMER OR ITS MIXTURES FAVORS DISPERSION. THE COLLOID CHEMICAL PROPERTIES OF DISPERSIONS PREPARED WITH VARIOUS EMULSIFIERS HAVE BEEN EXAMINED. THE SMALLEST PARTICLE SIZE WAS OBTAINED WHEN DISPROPORTIONATED ROSIN WAS USED AS EMULSIFIER. IT HAS BEEN PROVED POSSIBLE TO OBTAIN FILMS FROM BUTYL RUBBER DISPERSIONS. THE PROPERTIES OF THESE FILMS HAVE BEEN ASSESSED. DECREASE IN THE AMOUNT OF EMULSIFIER DURING DISPERSION OR DUE TO SETTLING OF DISPERSIONS SUBSTANTIALLY INCREASES THE FILM STRENGTH.

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6 UDC: 621.396.61

GELLER, V. M., VITYUGOV, V. A.

"On the Problem of the Operating Stability of Distributed Power Amplifiers"

Tr. Novosib. elektrotekhn. in-ta (Works of the Novosibirsk Electrical Engineering Institute), 1970, vyp. 2, kn. 2, pp 137-150 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6D255)

Translation: The operating stability of power amplifiers is considered on the basis of the imittance stability condition. An expression is derived which gives the stability condition in the form of the limiting permissible power amplification of the stage. It is shown that the use of triodes is inadvisable because of low amplification stability. A number of recommendations are given on construction of the amplifier circuit. Two illustrations, bibliography of ten titles. N. S.

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GELLER, Ye. S.

BRIEF DISCUSSION OF GENERAL COMMUNICATIONS
THEORY AND INFORMATION THEORY

Ye. S. Geller

pp 12-35

The purpose of any type of communications is the transmission of information from the sender to the receiver. The concept of "information" can roughly be defined as data which are the object of gathering, transmission, storage and processing.

Information exists either in static form when it is stored (in the form of recordings, images, and so on) or in dynamic form when it is transmitted (in the form of physical, physiological, chemical and other processes).

In 1927, Hartley already proposed a "quantitative measure permitting this measure was the starting point of information theory. If a call in which information is stored has n possible states, then two such calls will have n^2 possible states, and m calls, n^m possible states. This means that there is an exponential relation between the number of cells and the number of possible states. Considering this fact, Hartley introduced a logarithmic measure of information capacity:

$$C = \log N,$$

(1)

where N is the number of different states of the system.

This measure corresponds to the requirement of additivity, that is, the amount of information stored in m identical calls is m times greater than in one call. Actually, the information capacity of a system consisting of m cells and having n states is equal to the capacity of one cell multiplied by the number of cells:

$$C = \log n^m = m \cdot \log n.$$

(2)

If we take the logarithm to the base 2, the information capacity C will be the number of elementary binary calls each of which has two possible states. The capacity of this simplest binary call has been given the name "binary unit," or "bit."

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GELLER

YE.S.
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FROM: FBIS. Foreign Press Digest, Cybernetics in the USSR, 28 Jan 70, FPD 0006

54. USSR

TITOV, V. A., Compiler

Biologiya i Tekhnika (Biology and Technology); Moscow, "Znaniye" Publishing House, 1969, pp 1-3

Translation: Table of Contents

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FOREWORD

Advances in modern science, improvements in new technical devices and methods of scientific research, and the inception of new inter-disciplinary sciences, such as cybernetics, that explore subjects of different classes from unified vantage points and with unified methods (technical, biological, and social subjects), all this has led to a very decided narrowing of the gap between technical systems and biological materials.

Today few are any longer surprised by the fact that similar pathways are often independently chosen for the resolution of the same kinds of problems in nature and technology, nor the fact that technical systems and biological mechanisms sometimes exhibit surprisingly profound theoretical and structural similarities.

These facts have been the springboard for a new scientific pursuit -- bionics,

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which aims at purposefully studying and using for the interests of technology the properties and characteristics of living systems. Quite a large number of popular books have been written on bionics and much serious research has been devoted to it.

Examining all the extremely wide-ranging aspects and directions in bionics research would take too much space and time. Therefore, in this book we will look at only a number of fragments of bionics research in directions which have thus far remained relatively little studied and which are still of very great scientific and practical interest both for the development of purely bionic investigations conducted in the interests of technology, as well as for progress in relatively under-explored realms of biology and related disciplines. The compilation covers several of the newest aspects of modern bionics studies and, as the editor hopes, may promote the reader's fascination for the new and promising scientific discipline that bionics represents.

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Steels

USSR

UDC 669.018.2:620.17

GELLER, Yu. A., GORDEZIANI, A. G., and KREMNEV, L. S., Moscow Machine Tool
Institute

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 7,
1972, pp 131-134

Abstract: A study was made of the strength and viscosity of R18 (high-tungsten), R6M5 and R3M3 (tungsten-molybdenum), R9K9 (cobalt), and R14F4 (high-vanadium) high-cutting steels at temperatures up to 625°C. The results are discussed by reference to diagrams showing that at 20°C the strength of R6M5 steel is 6-10% higher than R18 steel, the strength of R9K5 and R14K4 steels decreases at 525-625°C with the same intensity as that of R6M5 steel, and the viscosity of R6M5 steel is 30-40% higher than that of R18 steel. The increase in strength at higher temperatures is more intensive in tungsten-molybdenum steels with a relatively low quantity of residual carbide phase and less intensive on R18 steel with a high quantity of carbides. The impact ductility increases with rising temperature, depending on the composition of the solid solution; the increase is higher in high-cutting steels alloyed with molybdenum or cobalt. Cobalt steels are recommended for cutting under conditions of developing adhesion wear. Vanadium steels are best used for cutting conditions without extensive heating. Three figures, two bibliographic references.

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Materials

USSR

UDC 620.10

GELLER, YU. A., Doctor of Technical Sciences, Professor; YEVTUSHENKO, A. T., Aspirant; MOISEYEV, V. F., Candidate of Technical Sciences, Docent, Moscow Institute of Machine Tools and Instruments

"Study of the Effect of the Composition and Structure of Die Steels on Wear Resistance Under Shock-Abrasive Wear"

Moscow, Izvestiya vysshikh uchebnykh zavedeniy, Mashinostroyeniye, No. 12, 1971, pp 109-115

Abstract: Die steels of the basic structural classes 5KhNV, 6KhZFS, 7KhG2VM, Kh6VF, Kh12F1 and Kh12M were studied since many dies are used under shock-abrasive conditions and data for determining a rational selection of the steel and its heat treatment are not available. The hardness of the steels was varied by heat treatment from 38 to 625 HRC and viscosity varied from 0.5 to 7.0 kGm/cm². The steels also differed in the amount of residual austenite and the carbide phase. The wear resistance was determined under shock-abrasive wear on the basis of attached abrasive particles under a shock energy of 0.75 and 2.0 kGm from the weight loss and character of the wear. The study showed

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GELLER, YU. A., et al, Izvestiya vysshikh uchebnykh zavedeniy, Mashinostroyeniye, No. 12, 1971, pp 109-115

that the wear resistance of alloyed die steels under shock-abrasive wear is determined by the total effect of the hardness, viscosity, the amount of the carbide phase, and the residual austenite. The hardness effect was the most considerable. An increase in it with a fixed quantity of carbides and austenite in the structure is accompanied by a rise in wear resistance. An increase in viscosity achieved by isothermal tempering, i.e., without grain growth and a drop in hardness, improves wear resistance. The effect of the carbide phase is the function of the hardness and viscosity of the steel: it improves the wear resistance at high hardness (59-60 HRC) and somewhat reduces it at lower hardness (49-51 HRC). Results have shown that an increase in the amount of austenite improves the wear resistance if the austenite retains sufficient stability under cooling to -60°C . The greatest wear resistance is exhibited by alloyed die steel at 0.6% C.

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USSR

UDC: 669.018.4:621.785.78:546.261

GELLER, YU. A., MOISEYEV, V. F., ARANOVICH, A. O., and LEVINA, K. YA.,
~~Moscow Machine-Tool~~ Institute

"Effect of the Carbide Phase on the Properties of Chromium Tool Steels"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 1,
1971, pp 145-148

Abstract: The effect of vanadium (1-4%) on the structure and properties of steels containing 3.6 and 12% Cr and 1.0-1.9% C has been studied. It was found that vanadium forms independent carbides at carbon concentrations above 1.6% with 12% Cr, at C concentrations of 1.1 and 0.85% with 6 and 3% Cr, respectively. In steels with lower carbon concentrations, vanadium dissolves in chromium carbides. Due to their high hardness (2200 HV), vanadium carbides raise the wear resistance of the steel and, by reducing the grain size, increase the steel's strength. When present in chromium carbides, vanadium (on hardening) goes into solid solution, causing the

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GELLER, YU. A., et al, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 1, 1971, pp 145-148

tendency of the steel to precipitation hardening on tempering at 540-560°C, which increases the strength but markedly decreases the steel's ductility (to a fraction of 2-3). Tables in the original article show the chemical composition of the experimental steels, the amount of the carbide phase, and the composition of carbides and the solid solution (as annealed). A figure demonstrating the effect of the hardening temperature on the strength of steel on bending after tempering at 150°C with 3, 6, and 12% Cr is also given.

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USSR

UDC 621.9.025:669.15'25'27-192

ISAYEV, A. I. and GELLER, Yu. A., Doctors of Technical Sciences, Professors,
and KIRILLOVA, O. M. and BROSTREM, V. A., Candidates of Technical Sciences

"Dispersion-Hardened Tool Alloys for Processing of High-Strength Structural
Materials"

Moscow, Vestnik Mashinostroyeniya, No 1, Jan 71, pages 53-57

Abstract: The properties of various types of dispersion-hardened steels have been studied, resulting in recommendation of type V18M7K25 and V18M4K25 alloys containing molybdenum for the manufacture of tools. The cutting properties of these alloys were studied under continuous and intermittent cutting conditions. The influence of heat treatment modes on the properties of the alloys were studied. The investigations showed that a change in hardening temperature between 1250 and 1300°C has no significant influence on the strength and cutting properties of the alloy. The tempering temperature is more significant in this respect. It is established that the maximum strength of cutting tools of V18M7K25 alloys for continuous turning of high strength materials is provided by hardening from 1275-1300°C with subsequent tempering

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ISAYEV, A. I., et al., Vestnik Mashinostroyeniya, No 1, Jan 71, pages 53-57

at 600°C for 2 hours. The hardness of the cutting portion of the tools in this case will be HRC 68-69. Studies have shown that the most effective area of utilization of these tool alloys is in the working of alloys of titanium, austenitic high-manganese and high-strength steels.

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